REMARKS/ARGUMENTS

The Examiner is thanked for the Notice of Non-Compliant Amendment mailed June 6, 2008. In the Notice of Non-Compliant Amendment, the Office indicates that a complete listing of the claims is not present and that each claim has not been provided with the proper status identifier. Applicant submits herein a revised Amendment, including a complete listing of the claims with the proper status identifiers. It is believed that revised Amendment overcomes the non-compliance, and it is respectfully requested that the non-compliance be withdrawn.

The status of the application is as follows:

- Claims 1-10 and 20-30 are pending. Claims 1, 3, 5 and 9 have been amended herein, claims 2 and 11-19 have been cancelled, and claims 20-30 have been added.
- Claims 1 and 9-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanaka (US 5,793,375).
- Claims 2-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka in view of Chen et al. (US 6,047,080).

The rejections are discussed below.

The Rejection of Claims 1 and 9-10 under 35 U.S.C. 102(b)

Claims 1 and 9-10 stand rejected under 35 U.S.C. 102(b) as being anticipated by Tanaka. This rejection should be withdrawn because Tanaka does not teach each and every element as set forth in the subject claims and, therefore, does not anticipate claims 1 and 9-10.

> A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987). MPEP §2131.

Independent **claim 1** has been amended herein to include aspects of claims 2 and 9. In particular, amended claim 1 now also recites that the base surface is a sphere, the means for defining a base surface includes a means for determining vessels centerlines, and the system further includes a means for mapping the base surface to the centerlines to define a true form surface. The Office has conceded that Tanaka does not teach or suggest a means for defining a

base surface, which includes a means for determining vessels centerlines, and a means for mapping the base surface to the centerlines to define a true form surface. As such, this rejection should be withdrawn.

Moreover, Tanaka does not teach or suggest means for defining a base surface, wherein the base surface is a sphere. In contrast, Tanaka discloses stacking a plurality of slices (Fig. 3), interpolating data intermediate to the slices to form gray-level volume data consisting of voxels with gray-level values (Fig. 4), binarizing the gray-level volume data, and extracting a region of interest (ROI) from the volume data via thresholding in which voxels in the ROI are assigned a value of "1" and voxels outside of the ROI area assigned a value of "0." (See column 4, line 66, to column 5, line 7).

Clearly, this process does not define a shape of a base surface to be spherical. Rather, this process extracts a subset of data from a volume of data, and the particular shape of the extracted data is not determined by the process, but instead is a function of the shape of the ROI, which is set based on the threshold. By way of example, if the threshold is set so that voxels with values that correspond to the lungs are assigned a value of "1" and voxels with values that do not correspond to the lungs are assigned a value of "0," then the ROI will be lung-shaped. Fig. 5 shows a spherical ROI, but clearly the shape of the ROI is not a function of the extraction process, but rather the tissue of interest.

In view of the foregoing, the rejection of claim 1 should be withdrawn.

Amended **claim 9**, which depends from 1, recites that the base surface is an ellipsoid. As such, the discussion above regarding the shape of the base surface applies *mutatis mutandis* to claim 9. In addition, Tanaka is silent regarding to an ellipsoid shaped base surface. Accordingly, this rejection should be withdrawn.

Amended **claim 10**, which depends from 1, recites that the diagnostic imaging system of claim 1 converts a portion of the three dimensional image representation into a coronary arteries tree display, and a display connected to the diagnostic imaging system of claim 1 displays the coronary arteries tree in a context of the region of interest. The Office does not address these claim aspects in the Office Action.

As such, the Office has not established a *prima facie* case of anticipation because the Office Action has failed to identify which features of the prior art correspond to the claimed

elements and limitations. To meet the burden of establishing a *prima facie* case of anticipation, the Office must explain how the rejected claims are anticipated by pointing out where the specific limitations of the claims are found in the prior art. *Ex Parte Naoya Isoda*, Appeal No. 2005-2289, Application 10/064,508 (Bd. Pat. App. & Inter.2005). The goal of examination is to clearly articulate any rejection early in the prosecution process so that the applicant has the opportunity to provide evidence of patentability and otherwise reply completely at the earliest opportunity. (MPEP §706). The pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified. (37 C.F.R. §1.104(c)(2)).

Applicant requests allowance of claim 10 or another non-final Office Action with specific identification of each feature or element in the cited reference which is deemed to correspond to the claimed elements and limitations, and if possible the location in the cited reference where the relevant feature or element is discussed.

The Rejection of Claims 2-8 under 35 U.S.C. 103(a)

Claims 2-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka in view of Chen et al. This rejection should be withdrawn because the combination of Tanaka and Chen et al. does not teach or suggest all the limitations of the subject claims and, therefore, the Office has failed to establish a *prima facie* case of obvious with respect to the subject claims.

> To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, (CCPA 1974). "MPEP §2143.03.

With respect to these claims, the Office states that Tanaka substantially discloses all features of the current invention, but does not specifically teach a means for determining centerlines to define a true form surface (which is a limitation in cancelled claim 2 and in claims 3 and 8). In an attempt to make up for this conceded deficiency, the Office references Chen et al.

As noted above, the goal of examination is to clearly articulate any rejection early in the prosecution process so that the applicant has the opportunity to provide evidence of patentability and otherwise reply completely at the earliest opportunity. (MPEP §706). The pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified. (37 C.F.R. §1.104(c)(2)).

The Office has failed to identify which features of the prior art correspond to the elements and limitations of claims 4-7. As such, applicant requests allowance of claims 4-7 or another non-final Office Action with specific identification of each feature or element in the cited reference which is deemed to correspond to the claimed elements and limitations, and if possible the location in the cited reference where the relevant feature or element is discussed.

Moreover, **claims 3-8** depend from claim 1 and are allowable at least by virtue of their dependencies. It is note that the dependencies of claims 3 and 5 have been amended herein as a consequence of the cancellation of claim 2.

New Claims 20-30

Newly added claims 20-30 emphasize various aspects. No new matter has been added. Entry and allowance of claims 20-30 is respectfully requested. Independent **claim 20** is directed to a system that includes a base surface processor that approximates a spherically-shaped base surface, a volume selector that selects a volume of data from a volume memory, a centerlines determiner that finds centerlines of the vessels in the selected volume, a best fitting surface process that draws a spherically shaped best fitted surface to the determined centerlines, a gridder that spreads a grid over the base surface, thereby gridding the sphere into pixels, a projector that projects a normal from each pixel, and an assigner that assigns each pixel a grayscale value based on grayscale value of voxels intersected by a corresponding normal. Neither Tanaka, Chen et al. nor the combination thereof teach or suggest each and every one of these claim aspects. Portions of the discussion above apply where appropriate. **Claims 21-30** directly or indirectly depend from claim 20 and are allowable at least by virtue of their dependencies. Moreover, claims 21-30 include aspects absent from Tanaka, Chen et al. and/or the combination thereof.

Conclusion

In view of the foregoing, it is submitted that the claims distinguish patentably and non-obviously over the prior art of record. An early indication of allowability is earnestly solicited.

Respectfully submitted,

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